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ABSTRACT

A study collected baseline data about the status of teacher preservice Career and Technology Education (CTE) from program chairs at colleges and universities in the United Status. The survey had six sections: pedagogical competencies for CTE teachers, CTE certification process, course delivery, recent program revisions, CTE program demographics, and tracking information. The importance of the following competencies was measured, yielding primarily Likert scale data and categorical data: workplace readiness, student assessment, career decision-making, learning to learn, business skill, managing life roles, social development, collaboration with various segments of the community, and importance of several educational principles. Of the 673 surveys originally sent, approximately 44 percent were returned and 227 were analyzed. Findings indicated the primary model for most CTE certification areas was based on a baccalaureate degree in the given certification area; the highest rated competencies for CTE teacher preparation indicated a clear, strong commitment to meet the needs of student learning; program chairs believed that making their students effective in solving problems was a rewarding and useful purpose for CTE; and the primary method used to teach and deliver the educational program was the traditional lecture and student teaching approach, but newer methods such as the professional development school had started to make an impact on the profession. (Contains 15 references.) (YLB)

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The Status of Preservice Education in Career and Technology Education

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The Status of Preservice Education in Career and Technology Education

Introduction

Many reports mention a need for more and better-prepared teachers in Career and Technology Education (CTE). In addition, according to Camp (1998) there is an unmet demand for CTE teachers in certain areas. The 2000-2001 edition of the US Department of Labor's Occupational Outlook Handbook says that overall, career and technical teaching positions will grow at about 10-20% per year until 2008. If this trend continues over time, it will be increasingly difficult to continue CTE public school programs in some states because of teacher shortages. Moreover, there are many in the profession who are concerned about the quality of the training that future teachers receive. Increasingly the profession is moving toward the integration of academic, vocational and technical education, collaborative learning arrangements, career clusters, contextualized learning, accountability and developing career academics in programs. What is not clear is how these concepts and practices are being taught to future teachers. How many of these new and modified approaches to career technology education are being taught in preservice university programs? Are these efforts systematic or piecemeal? What practical and theoretical models are in place to help facilitate and to teach future educators? How do technological changes impact the preparation for both academic and job skills?

Clearly these pressing issues need to be resolved in order for the profession to move forward. To address these issues, a two-pronged scope of work was undertaken. First, a database was established of the CTE programs nationwide. Secondly, an analysis of data from CTE preservice programs was used to describe characteristics of these programs and the context in which teacher preparation occurs.

Background

Pre-service CTE teacher education is presently characterized as decreasing in capacity (Lynch, 1990), increasing in demand (US Department of Labor, 2000), and changing in focus (State Directors of Vocational Education Task Force on Vocational Technical Teacher Education, 1995; Holder & Pearson, 1996; Lynch, 1997; National Board for Professional Teaching Standards, 1997). There is a feeling that the capacity of universities and four-year colleges to prepare pre-service CTE teachers has decreased significantly over the past ten years in terms of number of institutions with programs, number of teacher educators, student enrollments, and financial subsidies by state vocational education agencies. In addition, more CTE teachers are being certified via an alternative pathway, such as non-baccalaureate postgraduate programs or through a combination of testing, coursework, and credit for work experience.

The demand for CTE teachers is increasing due to the large number of CTE teachers retiring, opportunities for CTE teachers to return to private sector employment, and an increase in new positions in some fields (i.e., agriculture, family and consumer science, technology, business). At the same time, there is a change in the competencies needed by CTE teachers specifically in areas of school-to-career, youth apprenticeship, integration of academic and occupational skills, articulation of secondary and postsecondary education, and coordination of school-, community- and work-based learning to better link academics and the workplace.

Additionally, recent reports indicate existing discrepancies between teacher preparation, practice, and professional development. The U.S. Department of Education (September 1999) indicates that fewer than 30% of new teachers feel well prepared, indicating discrepancies between teacher preparation and practice. Stasz and Brewer (1999) mention

that current academic coursework does not include the full range of skills needed on the job. They found that academic study lacked authentic tasks and, therefore, often failed to teach for transfer regarding important job skills. Increasingly, jobs are found to be increasingly complex and communities have a need for workers who can apply higher-level math skills and specific scientific knowledge in the workplace.

As found in the RAND study (Stasz & Brewer, 1999), traditional preservice program models have developed a population of teachers focused more on their perceived needs than the actual needs of the community. Presently, there is no clear understanding of whether the workplace skills needed by society are being met by traditionally trained CTE teachers. To meet the need for skilled workers in the future, CTE programs will need to be the result of partnerships among schools, communities and business, and the incorporation of current work based skills into the curriculum. Teachers will need to better understand the role of academics in business, industry and community organizations, and how to ensure that their programs remain aligned with needs of the workplace (Phelps, 1998).

The way teachers work also will need to change. Instead of the typically isolated teacher, future CTE teachers will need to work collaboratively with many elements of the education community and in real work settings to develop curriculum that will advance and assess student learning across the curriculum (Finch, Schmidt & Faulkner, 1992; Phelps & Hanley-Mannell, 1997). In addition, CTE programs need to attract more students who are able to learn academic subjects. Thus, employers, students, and teachers must deem the curriculum relevant.

Objectives

The purpose of this study was to describe the status of CTE from the perspective of program chairs at colleges and universities in the US. The overall objectives of this initiative were to:

1. Identify and describe the pedagogical competencies desired within the curriculum of teacher preservice CTE.

2. Identify the status of CTE in areas such as integration.

3. Identify "change" programs and practices that CTE educators can use to strengthen preservice programs.

Methods

The goal of the study was to collect comprehensive baseline data about the status of CTE from program chairs. Survey construction was guided by several reports: Standards for National Board Certification: Vocational Education by the National Board for Professional Teaching Standards (1997), Association for Career and Technical Education Division Report: Trade and Industrial Education (Walker and Zirkle, 2000) and A National Database On Vocational Teacher Education (Lynch, 1990). Three external teacher educators also validated the survey in addition to internal reviewers.

The programmatic survey had six sections: Pedagogical competencies for CTE teachers, CTE Certification Process, Course Delivery, Recent Program Revisions, CTE Program Demographics, and Tracking Information. The importance of the following competencies were measured: workplace readiness, student assessment, career decision making, learning to learn, business skills, managing life roles, social development, collaboration with

various segments of the community, as well as the importance of several educational principles.

The Sample

The sample for the programmatic survey was intended to be inclusive and representative of all teacher certification programs. With a goal of producing an accurate listing of who is certifying teachers in the vocational areas, three main information sources were used. Initially, Peterson's Four-Year on-line directory and the NCATE on-line directory were cross-referenced to establish a baseline of institutions offering teacher preparation in vocational areas. Second, a request for listing of contact people for CTE teacher preparation programs in each state, territory, and the District of Columbia was mailed to each state's vocational director. The returns from this request greatly expanded the database. Third, listings from professional associations were used, including the Association for Career and Technical Education, the Marketing Education Association, the American Association for Agriculture Education, the Council on Technology Teacher Education, and the National Association of Industrial and Technical Teacher Educators, and the American Association for Family and Consumer Science. By combining and cross-referencing these three searches and listings, we compiled a comprehensive database that initially had 673 entries of individual program chairs who might be responsible for certifying CTE teachers.

To have the most comprehensive information on the status of CTE teacher preparation, each of these 673 individual program chairs was sent the programmatic survey. The instrument was also available on line. Each survey return was tracked by the database record number. After 4 weeks, a follow up postcard that mentioned the URL for the on-line survey was mailed. A second survey mailing was completed about a month later which increased the overall rate of returns.

More than forty-four percent of the surveys were returned. Of the returns, 227 of these surveys contained information about current CTE teacher preparation programs, 48 indicated that they did not offer a CTE teacher certification program, 15 programs had been suspended or discontinued, and two indicated that they were too new to give us any data. Ten percent of the nonrespondents were survey by phone and or e-mail and it was determined that there was no difference between non-respondents and respondents.

Data Analysis

Survey returns were entered into SPSS for analysis. The on-line surveys were collected in a FileMaker Pro database prior to being entered into SPSS. The data are primarily Likert scale data and categorical data. Measures of central tendency and percentages were used for most of the survey items. Numbers in the tables and charts may not add up to 100% due to rounding.

Results

Models Used For Teacher Certification

The primary model for most CTE certification areas is based on a baccalaureate degree in the given certification area. Clearly, the primary method leading to certification is the baccalaureate model as seen in Table 1. Most certification areas use a post baccalaureate certification program as their secondary model. Lynch (1998) mentions that two areas require significant experience in the field. Trade-Industrial areas place the most importance on specific occupational competency to acquire teacher certification. In the present study,

only 31 of the 47 Trade and Industrial programs (66%) reported that a BS degree was their primary path to certification. Nine of the 29 programs reported that use of a secondary certification model required a combination of testing, course work, and competency to receive a teaching certificate. The only certification area that appears to be an outlier is Health Occupations. In Health Occupations, the majority of students are not receiving their baccalaureate degree along with teaching certification, as the teaching certificate often requires several years of occupational experience, which was mentioned by three of the seven institutions reporting a secondary model. Please note that the number of cases responding in this area is by far the lowest reported in the study.

Table 1. Models used for teacher certification: percent of reported cases

Certification Area	Baccalaureate Leads to Certification		Secondary Model for Certification	
Agriculture	90.9%	60/66 cases	28.6%	Post BS cert, 8/28 cases
Business	82.4%	42/51 cases	40.0%	Post BS cert, 10/25 cases
FCS	89.7%	70/78 cases	45.8%	Post BS cert, 11/24 cases
Marketing	94.4%	17/18 cases	27.3%	BS with certification area as a minor, 3/11 cases
			27.3%	Post BS cert , 3/11 cases
Technical Education	87.9%	29/33 cases	40.0%	BS, 4/10 cases
Trade and Industrial	66.0%	31/47 cases	31.0%	Tests+courses+occ. competency, 9/29 cases
Health Occupations	37.5%	3/8 cases	42.9%	Tests+courses+occ. experience, 3/7 cases

Curriculum in CTE Teacher Preparation -- Changing Competencies

The basic competencies were derived from previous NCRVE documents and are reflected in the items 1-38 in the instrument. To the respondents credit they indicated that the highest rated competency area was "designing meaningful instructional tasks based on the real world problems," as shown in Table 2. Second position was, "advancing student learning." Both of these responses indicated a clear strong commitment to meet the needs of student learning. Other competency areas that rated high were technology use, teamwork skills, staying abreast of change and leadership skills. Respondents rated all but eleven competency areas as important or higher. Of those items that ranked in the lowest quadrant, "Assessing students based on occupational standards" and "Identifying career paths, often thought to be a motivator for specific skill acquisition," were two competencies that many would predict that would rank higher.

At least seven of the Likert scale items measured the importance of student assessment in teacher prep programs. Assessment is considered a skill important for CTE teachers (Phelps & Hanley-Maxwell, 1997). Teachers must be able to monitor and assess their students' career interests, aptitudes, informal work, and academic skills using various assessment instruments and techniques. Other highly rated skills are the "soft" skills deemed critical to success in the workplace: teamwork, leadership, and working with people from diverse backgrounds. The ability to work collaboratively with businesses and colleagues also is considered important. The present study reports that assessing student

aptitudes and assessing students based on occupational standards had the lower means (3.68 and 3.76 respectively) indicating that they are not emphasized in teacher prep programs. The other assessment areas were higher.

Table 2. Means and standard deviations of perceived importance of competency areas in career and technology education programs.

Competency Area	N	SD	Mean
Designing meaningful instructional tasks based on real world problems	225	.55	4.72
Advancing student learning	224	.55	4.66
Technology use	224	.55	4.64
Teamwork skills	225	.60	4.54
Staying abreast of change	226	.65	4.53
Leadership skills	225	.70	4.48
Integration of academic areas & vocational education	226	.70	4.44
Working with people from diverse backgrounds	227	.63	4.41
Lifelong learning	226	.76	4.41
Human relations	225	.62	4.40
Collaborative partnership with business and other industries	226	.74	4.37
Using authentic assessment	222	.85	4.36
Collaborative partnerships with other faculty	226	.74	4.24
Adapting programs for special needs students	204	.75	4.19
Using assessment as an analytical tool for students	222	.75	4.18
Coordination of school and work-based learning	226	.78	4.17
Creating psychologically safe classrooms	223	.89	4.13
Developing coping skills	226	.79	4.11
Safety Education	216	.96	4.11
Academic support	219	.75	4.09

Table 2. Means and standard deviations of perceived importance of competency areas in career and technology education programs (*Table 2 continued*).

Competency Area	N	SD	Mean
Assessing students in a work context	224	.84	4.07
Articulation of secondary and post-secondary learning	227	.80	4.06
Community partnerships	224	.80	4.02
Collaborative partnership with families	227	.88	3.97
Understanding social and cultural norms	226	.84	3.94
Simulating workplace environments	223	.93	3.92
Collaborative partnerships with other educational intuitions	220	.78	3.92
Identifying career paths	225	.87	3.80
Entrepreneurship	224	.85	3.79
Assessing students based on occupational standards	212	1.02	3.76
Preparing for a larger role in communities	226	.86	3.73
Assessing student aptitudes	224	.97	3.68
Understanding labor trends and projections	225	.93	3.65
Family partnerships	225	.91	3.65
Preparing to manage personal finances	227	1.03	3.62

Scale: 5 = Very Important, 4 = Important, 3 = Somewhat Important, 2 = Low Importance, 1 = Not At All Important.

Instructional Models

The traditional model of developing new teachers is the prevailing model still being used in the preparation of CTE as shown in Table 3. Increased levels of integration are being used frequently but less than 50% of the time. Integration as a concept, is not a new idea to CTE. The respondents in this study indicate that it is not being used to the extent that most would expect after more than ten years of intensive national programming efforts.
In 1986, the Holmes Group introduced the concept of the Professional Development School as a national model for the development of teachers. The major goal of a Professional Development School is to improve preparation of teachers through an increased proportion of field based experience through collaborative partnerships with school districts and the teacher certification programs. Talented and exceptional teachers partnered with university professors to train teachers and connect with schools of

education. This study found that Professional Development School Model is used at less than half the institutions with any regularity. Forty-one or 18% of 227 programs indicated that they used the Professional Development School Model all the time. Sixty-six programs (29%) use the PDS model some of the time. If the PDS model is encouraged, perhaps institutions need to know the benefits of this model and how to implement such a model.

Table 3. Means and standard deviations of perceived use of instructional approaches by instructors/professors in program certification for CTE.

Approaches/Method	N	SD	Mean
Traditional approach: lecture and laboratory with typical student teaching semester or quarter	215	.91	3.18
Higher levels of math, science, and writing are integrated into the certification curriculum	217	.84	2.77
50% traditional approach and 50% integration approach	212	.89	2.62
Professional development school approach (more than 50% of total student time spent in field-based study and practice	215	1.07	2.43

Scale: 4 = Used All the Time, 3 = Used Infrequently, 2 = Used Some of the Time, 1 = Almost Never Used

Reform Movement

According to the respondents educational reform movement caused significant changes in curriculum as seen in Table 4. Preservice education, teaching methods and pre-service education were reported to have changed significantly -- compared to no change or little change. In adult education and inservice education, respondents indicated that the reform movement caused little change. The changes occurring in higher education are more pronounced in the development of new teachers than working with experienced teachers. This finding is not surprising as most teacher education programs focus on the development of new teachers.

Table 4. Frequency of perceived level of changes in program areas due to educational reform movements

Program Area	No Change		Changed Little		Changed Significantly		Total	
	N	%	N	%	N	%	N	%
Curriculum change	10	4.4	66	29.1	142	62.6	218	96.0
Teaching method	16	7.0	92	40.5	108	50.0	216	95.2
Adult education	71	31.3	91	40.1	34	15.0	196	86.4
In-service education	33	14.5	99	43.6	67	29.5	199	87.6
Pre-service education	24	10.6	82	36.1	100	44.1	206	90.8

Conclusions

Beyond the name change, Career and Technology Education is changing in a number of significant ways. In the area of competency, program chairs believed that making their students' effective in solving problems is a rewarding and useful purpose for CTE education. Surprisingly, career paths, understanding labor trends and projections, and assessing students based on occupational standards were competency areas that did not rate very high with these respondents. Perhaps these areas are not as well understood or they are not as well developed in the literature or by educational programmers.

While the primary method used to teach and deliver the educational program is still the traditional lecture and student teaching approach, newer methods such as the professional development school have started to make an impact on the profession. Unfortunately, higher levels of integration are not commonly being used by the profession. Until higher education begins to use the integration model as one of the primary models of delivery, it is unlikely that secondary teachers will ever fully embrace this approach.

References

Camp, W.G. (1998) *A national study of the supply and demand for teachers in agricultural education in 1995.* Blacksburg, VA: Virginia Polytechnic Institute and State University.

Finch, C., Schmidt, B. J. & Faulkner, S. (1992). Using Professional Development to Facilitate Vocational and Academic Education Integration: A Practitioner's Guide. University of California, Berkeley, National Center for Research in Vocational Education.

Holder, B. H., & Pearson, D. (1996). *Creating a future: Ensuring a Legacy: A summary of the 1995 San Diego summit on vocational teacher education and proposed action agenda for 1996 and beyond.* University Council for Vocational Education.

Holmes Group (1986) Tomorrow's Teachers, East Lansing, MI

Lynch, R. L. (1990). *A national database on vocational teacher education.* Macomb, IL: University of California, Berkeley, National Center for Research in Vocational Education.

Lynch, R. L. (1997). *Designing vocational and technical teacher education for the 21st century: Implications from the reform literature.* Columbus, OH: The Ohio State University, Center on Education and Training for Employment.

Lynch, R.L. (1998) *Occupational Experience as the Basis for Alternative Teacher Certification in Vocational Education.* US Department of Education (April 1998)

National Board for Professional Teaching Standards. (1997). *Vocational education standards for national board certification.* Washington, D.C.: National Board for Professional Teaching Standards.

Phelps, L. A. & Hanley-Maxwell, C. (1997). School-to-work transitions for youth with disabilities: A review of outcomes and practices. Review of Educational Research; Washington; Summer 1997;

Phelps, L. A. (1998). Changing Work, Changing Learning: The Imperative for Teacher Learning in the Workplaces and Community. *In Teacher Learning in the Workplace and Community*, National Center for Research in Vocational Education.

State Directors of Vocational Technical Education Task Force on Vocational Technical Teacher Education. (1995). *Final report*. Alexandria, VA: National Association of State Directors of Vocational Technical Education Consortium.

Stasz, C., & Brewer, D. J. (1999). *Academic Skills at Work: Two Perspectives* (MDS-1193). Berkeley: National Center for Research in Vocational Education, University of California.

U. S. Department of Education. (1999, September). *The current state of teaching in America.* Available: http://www.ed.gov/inits/teachers/invest/currentstate.html

U.S. Dept of Labor (2000) The Occupational Outlook Handbook, 2000-2001 edition. Available: http://stats.bls.gov/ocohome.htm

Walker, T. & Zirkle, C. (2000) Association for Career and Technical Education Division Report: Trade and Industrial Education. Available: http://www.avaonline.org/abouttrade3.html